

REMARKS

This Amendment is responsive to the Office Action mailed April 9, 2002 (the Action). Claims 1-20, 47, and 48 are pending. Applicants have canceled Claims 10, 14-17, 47, and 48. Applicants have also added new Claims 49-64. Applicants have amended Claim 1 to incorporate the recitations of Claim 10. New independent Claim 50 is Claim 14 rewritten in independent form.

Claims 9 and 11 stand rejected under 35 U.S.C. § 112, second paragraph, as being indefinite. Claims 1, 2, 4-20, and 47-48 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 6,255,367 to Bitler et al. in view of "Supercritical Fluids in Heterogeneous Catalysis" by Baiker. Claims 1, 2, 47, and 48 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 6,211,422 to DeSimone et al. in view of U.S. Patent No. 6,255,367 to Bitler et al. Claims 1-6, 20, 47, and 48 stand rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 5,734,070 to Tacke et al. Applicants address each of these rejections in the order in which they appear in the Action.

I. Indefiniteness Rejection

Claims 9 and 11 stand rejected under 35 U.S.C. § 112, second paragraph, as being indefinite.

Regarding Claim 9, Applicants respectfully submit that the recitations "enzymes derived from microbial sources, enzymes derived from plant sources, enzymes derived from animal sources, enzymes derived from extremophiles" will be understood by one skilled in the art and, thus, are not indefinite. However, in order to expedite prosecution, Applicants have amended Claim 9 to recite "enzymes, and mixtures thereof." Applicants respectfully request that this rejection be withdrawn.

Regarding Claim 11, Applicants note that Claim 11 does not contain the recitation "derived from." Accordingly, Applicants request that this rejection be withdrawn. In the event that the Examiner intended to reject Claim 13, which does include the recitations "derived from," Applicants respectfully submit that the recitations "a fluoropolymer derived from acrylate or methacrylate monomers" would be understood by one skilled in the art, particularly in view of the description provided in the specification at page 8, and,

accordingly, is not indefinite.

For at least the foregoing reasons, Applicants respectfully request that these rejections be withdrawn.

II. Claim 1 is Patentable Over Bitler in view of Baiker

Claims 1, 2, 4-20, and 47-48 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 6,255,367 to Bitler et al. in view of "Supercritical Fluids in Heterogeneous Catalysis" by Baiker. Applicants respectfully traverse this rejection.

To establish a prima facie case of obviousness, the prior art reference or references when combined must teach or suggest *all* the recitations of the claim, and there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. M.P.E.P. § 2143. The mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination. M.P.E.P. § 2143.01, citing *In re Mills*, 916 F.2d 680, 16 U.S.P.Q.2d 1430 (Fed. Cir. 1990). To support combining references, evidence of a suggestion, teaching, or motivation to combine must be clear and particular, and this requirement for clear and particular evidence is not met by broad and conclusory statements about the teachings of references. *In re Dembiczak*, 50 U.S.P.Q.2d 1614, 1617 (Fed. Cir. 1999). The Court of Appeals for the Federal Circuit has also stated that, to support combining or modifying references, there must be particular evidence from the prior art as to the reason the skilled artisan, with no knowledge of the claimed invention, would have selected these components for combination in the manner claimed. *In re Kotzab*, 55 U.S.P.Q.2d 1313, 1317 (Fed. Cir. 2000). Respectfully, as will be discussed below, the Action fails to meet the requirements for a showing of obviousness under § 103.

Applicants respectfully submit that neither Bitler nor Baiker, either alone or in combination, disclose or suggests all of the recitations of Claim 1. As amended, Claim 1 recites a method for carrying out a catalysis reaction in carbon dioxide comprising:

contacting a fluid mixture with a catalyst bound to a polymer, the fluid mixture comprising at least one reactant and carbon dioxide, wherein the reactant interacts with the catalyst to form a reaction product, and wherein the

polymer is soluble in carbon dioxide.

Bitler and Baiker neither disclose nor suggest the recited method "wherein the polymer is soluble in carbon dioxide." Applicants respectfully submit that Bitler proposes "the use of polymeric materials which comprise (i) a crystalline polymeric ingredient which melts and flows over a relatively small temperature range and (ii) an active chemical ingredient which promotes or inhibits a chemical reaction of a matrix." (Col. 2, lines 19-23). Accordingly, Bitler proposes a large genus of polymers. As admitted by the Action, Bitler is "silent about employing the disclosed compositions in the presence of carbon dioxide." (the Action, page 4). Accordingly, Bitler does not teach or suggest whether any of the polymers within this large genus may be soluble in carbon dioxide. Furthermore, Bitler does not give any guidance to one skilled in the art as to how to select polymers from the large genus of proposed polymers that would be soluble in carbon dioxide. Baiker does not address the shortcomings of Bitler. For at least the foregoing reasons, Applicants respectfully submit that Claim 1 is patentable over Bitler in view of Baiker.

II. Claim 50 is Patentable Over Bitler in view of Baiker

New Claim 50 (formerly dependent Claim 14) stands rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 6,255,367 to Bitler et al. in view of "Supercritical Fluids in Heterogeneous Catalysis" by Baiker. Applicants respectfully traverse this rejection.

To establish a prima facie case of obviousness, the prior art reference or references when combined must teach or suggest *all* the recitations of the claim, and there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. M.P.E.P. § 2143. The mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination. M.P.E.P. § 2143.01, citing *In re Mills*, 916 F.2d 680, 16 U.S.P.Q.2d 1430 (Fed. Cir. 1990). To support combining references, evidence of a suggestion, teaching, or motivation to combine must be clear and particular, and this requirement for clear and particular evidence is not met by broad and conclusory statements about the teachings of

references. *In re Dembiczak*, 50 U.S.P.Q.2d 1614, 1617 (Fed. Cir. 1999). The Court of Appeals for the Federal Circuit has also stated that, to support combining or modifying references, there must be particular evidence from the prior art as to the reason the skilled artisan, with no knowledge of the claimed invention, would have selected these components for combination in the manner claimed. *In re Kotzab*, 55 U.S.P.Q.2d 1313, 1317 (Fed. Cir. 2000). Respectfully, as will be discussed below, the Action fails to meet the requirements for a showing of obviousness under § 103.

Applicants respectfully submit that neither Bitler nor Baiker, either alone or in combination, disclose or suggests all of the recitations of Claim 50. Claim 50 recites a method for carrying out a catalysis reaction in carbon dioxide comprising:

contacting a fluid mixture with a catalyst bound to a polymer, the fluid mixture comprising at least one reactant and carbon dioxide, wherein the reactant interacts with the catalyst to form a reaction product, and wherein the polymer is insoluble in and swellable carbon dioxide.

Bitler and Baiker neither disclose nor suggest the recited method "wherein the polymer is insoluble and swellable in carbon dioxide." Applicants respectfully submit that Bitler proposes "the use of polymeric materials which comprise (i) a crystalline polymeric ingredient which melts and flows over a relatively small temperature range and (ii) an active chemical ingredient which promotes or inhibits a chemical reaction of a matrix." (Col. 2, lines 19-23). Accordingly, Bitler proposes a large genus of polymers. As admitted by the Action, Bitler is "silent about employing the disclosed compositions in the presence of carbon dioxide." (the Action, page 4). Accordingly, Bitler does not teach or suggest whether any of the polymers within this large genus may be insoluble and swellable in carbon dioxide. Furthermore, Bitler does not give any guidance to one skilled in the art as to how to select polymers from the large genus of proposed polymers that would be insoluble and swellable in carbon dioxide. Baiker does not address the shortcomings of Bitler. For at least the foregoing reasons, Applicants respectfully submit that Claim 50 is patentable over Bitler in view of Baiker.

IV. DeSimone is Not a Prior Art Reference

Claims 1, 2, 47, and 48 stand rejected under 35 U.S.C. § 103(a) as being unpatentable

over U.S. Patent No. 6,211,422 to DeSimone et al. in view of U.S. Patent No. 6,255,367 to Bitler et al. Applicants respectfully traverse this rejection because DeSimone is not a prior art reference.

DeSimone issued on April 3, 2001 and was filed July 13, 1999. Thus, DeSimone was filed before the filing of the present application, but issued after the filing of the present application. Therefore, DeSimone is only prior art under 35 U.S.C. § 102(e). Furthermore, the present application and DeSimone are both assigned to North Carolina State University and The University of North Carolina at Chapel Hill.

In pertinent part, Section 4807 of the American Inventors Protection Act of 1999, which was enacted November 29, 1999, amended Section 103(c) to recite:

Subject matter developed by another person, which qualifies as prior art only under one or more of subsections (e), (f) and (g) of Section 102 of this title, shall not preclude patentability under this section where the subject matter and the claimed invention were, at the time the invention was made, owned by the same person or subject to an obligation of assignment to the same person.

35 U.S.C. § 103(c). Furthermore, Section 4807 states that the amendment "shall apply to any application for patent filed on or after the date of the enactment of this Act." S 1948 IS Section 4807. Accordingly, as DeSimone and the present application were, at the time the inventions were made, owned by the same person or subject to an obligation of assignment to the same person, DeSimone cannot be relied on as prior art in an obviousness rejection of the present application, which was filed after November 29, 1999. Applicants, therefore, request withdrawal of the present rejection based on DeSimone in view of Bitler.

V. Claim 1 is Not Anticipated by Tacke

Claims 1-6, 20, 47, and 48 stand rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 5,734,070 to Tacke et al. Applicants have amended Claim 1 to include the recitations of Claim 10. Accordingly, Applicants respectfully request that this rejection be withdrawn.

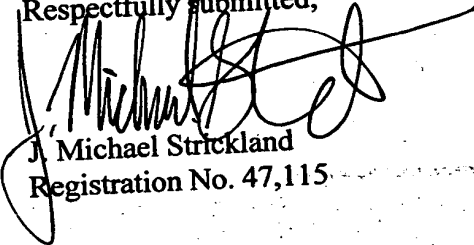
VI. Conclusion

The concerns of the Examiner addressed in full, Applicants respectfully request

In re: Application of DeSimone et al.
Serial No.: 09/641,815
Filed: August 18, 2000
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withdrawal of the outstanding rejections and the issuance of a Notice of Allowance forthwith.
Any questions regarding the foregoing should be directed to the undersigned, who may be reached at (919) 854-1400.

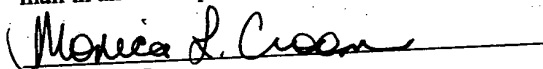
Respectfully submitted,


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CERTIFICATE OF MAILING

I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail in an envelope addressed to: Commissioner for Patents, Washington, DC 20231, on September 9, 2002.


Monica L. Croom

VERSION WITH MARKINGS TO SHOW CHANGES MADE

In the Claims:

Please cancel Claims 10, 14, 15, 16, 17, 47, and 48.

Please replace Claims 1, 9, and 11 with the following amended claims:

1. (Amended) A method for carrying out a catalysis reaction in carbon dioxide, said method comprising:

contacting a fluid mixture with a catalyst bound to a polymer, the fluid mixture comprising at least one reactant and carbon dioxide, wherein the reactant interacts with the catalyst to form a reaction product, and wherein the polymer is soluble in carbon dioxide.

9. (Amended) The method according to Claim 8, wherein the enzymatic catalyst is selected from the group consisting of alcohol dehydrogenases, alcohol oxidase, aldolase, phosphatases, alpha-chymotrypsin, asparaginase, anhydrase, catalase, creatine kinase, glutaminase, oxidases, lipases, luciferase, urease, hydratase, peroxidase, subtilisin Carlsberg and BPN', thermolysin, superoxidase, nitrileamidase, esterases, transaminase, trypsin, fumarase, amidase, acylase, peptidases, carboxylases, RNAses, glycolases, transeferases, enzymes [derived from microbial sources, enzymes derived from plant sources, enzymes derived from animal sources, enzymes derived from extremophiles], and mixtures thereof.

11. (Amended) The method according to Claim [10] 1, wherein the polymer comprises at least one carbon dioxide-philic group.

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